

Instruments assessing motivation for change in eating disorders and their psychometric properties – a review.

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Abstract

Objective: Most patients with an eating disorder are not motivated to change their behavior. Prior research has demonstrated the prognostic value of a stages of change model in predicting outcome. Further, identifying the factors which influence an individual's decision to change may bolster treatment effectiveness. An instrument with good reliability and validity for assessing motivation in eating disorders is necessary to correctly identify the patient's motivational state. The aim of this paper was to review the available instruments for assessing motivation in eating disorders, and to summarize their psychometric properties.

Methods: The instruments RMI, P-CAN, DB, ANSOCQ, BNSOCQ, MSCARED, ACTA, and URICA were reviewed. Literature was found using the key words "eating disorders or anorexia nervosa" and "motivation or readiness to recover" in the electronic databases, PubMed and PsychINFO.

Results: All the instruments showed moderate to good reliability (internal consistency and/or test-retest reliability). The studies were designed to evaluate different kinds of validity, which was generally supported.

Discussion: The studies reviewed employed different methodologies, rendering it difficult to directly compare the assessments. Choosing a successful measure requires specifying the goals of the assessment, type of setting and patient group, as well as practical considerations such as available resources. Future research may benefit from a cross-instrument comparison, allowing for a more direct comparison of the instruments' performance.

Introduction

Only 20% of individuals with a given problem are presumed ready to take action to deal with the problem (Dozois et al. 2004). Why are people not motivated to change a behaviour such as smoking, drinking or restricting eating when it obviously is destructive? Or refuse treatment for an illness? Let's jump into the jungle of motivation!

Before proceeding further, some definitions are needed.

Motivation is the desire and drive for change (Geller et al. 2001). The term *readiness* emphasizes that change is the result of the individual's capacity for change, and faith that change is possible and will result in a positive outcome (Geller et al. 2001).

1. The trans-theoretical model of change

Prochaska and DiClemente (1992) have developed a stages of change model. The model was originally developed for smoking cessation, but is now applied to many different fields. Each stage requires a period of time and a set of tasks for movement to the next stage. The normal course of change consists of relapses and recycling between the different stages of change.

According to this model, five stages can be described:

Stage 1: **Precontemplation**: the person is unaware of the problem and unwilling to change,

Stage 2: **Contemplation**: the person is aware of the problem, but unwilling to change,

Stage 3: **Preparation**: the person is aware of the problem and intending to change in the near future,

Stage 4: **Action**: the person is actively working on making a change,

Stage 5: **Maintenance**: the person has made the change, and is working on maintaining it.

2. Decisional balance is defined as identifying and weighing positive and negative consequences of particular behaviours (here related to eating disorders) against each other (Cockell et al. 2003). The positive aspects are called pros or benefits in the literature and the negative aspects are called cons or burdens. Patients with anorexia nervosa often recognize the negative and potentially dangerous effects of their disorder, but at the same time they feel that their disorder has some positive benefits for them. This creates ambivalence about recovering from the disorder, and this is especially noticeable when making attempts to change the behaviour of restricting eating (Cockell et al. 2002 & 2003).

In the precontemplation stage, usually only the positive aspects of the disorder are considered. The patient begins to consider the cons in the contemplation stage, and in the preparation stage, there is some sort of decisional balance between the pros and cons. In the action and maintenance stages the cons exceed the pros (Lask et al. 2007). A growing literature suggests that how this ambivalence is handled in therapy, is critical to the therapeutic alliance and may influence the client's general receptivity to change and recovery (Cockell et al. 2003).

3. Self-efficacy is an individual's expectation that she can successfully execute a particular behaviour (Rieger et al. 2002). It is assumed that high self-efficacy yields a more active engagement in behavioural change, and that the level of self-efficacy will increase from precontemplation to maintenance (Rieger et al. 2002).

4. Eating disorders

In the DSM-IV (American Psychiatric Association, 2000), eating disorders are defined as severe disturbances in eating behaviour. The classification scheme includes Anorexia Nervosa, Bulimia Nervosa, and Eating Disorders Not Otherwise Specified.

Diagnostic criteria for 307.1 Anorexia Nervosa

- A. Refusal to maintain body weight at or above a minimally normal weight for age and height (e.g., weight loss leading to maintenance of body weight less than 85% of that expected; or failure to make expected weight gain during period of growth, leading to body weight less than 85% of that expected).
- B. Intense fear of gaining weight or becoming fat, even though underweight.
- C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or denial of the seriousness of the current low body weight.
- D. In postmenarcheal females, amenorrhea, i.e., the absence of at least three consecutive menstrual cycles. (A woman is considered to have amenorrhea if her periods occur only following hormone, e.g., estrogen, administration.)

Specify type:

Restricting Type: during the current episode of Anorexia Nervosa, the person has not regularly engaged in binge-eating or purging behaviour (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Binge-Eating/Purging Type: during the current episode of Anorexia Nervosa, the person has regularly engaged in binge-eating or purging behaviour (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)

Diagnostic criteria for 307.51 Bulimia Nervosa

- A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both the following
 - (1) eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances
 - (2) a sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating)
- B. Recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise.
- C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least twice a week for 3 months.
- D. Self-evaluation is unduly influenced by body shape and weight.
- E. The disturbance does not occur exclusively during episodes of Anorexia Nervosa.

Specify type:

Purging Type: during the current episode of Bulimia Nervosa, the person has regularly engaged in self-inducing vomiting or the misuse of laxatives, diuretics, or enemas.

Nonpurging Type: during the current episode of Bulimia Nervosa, the person has used other inappropriate compensatory behaviors, such as fasting or excessive exercise, but has not regularly engaged in self-induced vomiting or the misuse of laxatives, diuretics, or enemas.

Diagnostic criteria for 307.50 Eating Disorders Not Otherwise Specified

The Eating Disorders Not Otherwise Specified category is for disorders of eating that do not meet the criteria for any specific Eating Disorder.

In the treatment of eating disorders, therapeutic difficulties such as refusal, failure to acknowledge problems, non-compliance, and dropout occur frequently (Jordan et al. 2003, & Martinez et al. 2007). Poor motivation characterized in the precontemplation and contemplation stages significantly complicates treatment (Jordan et al. 2003). Consequently, the following considerations of utmost importance:

1. Understanding a patient's ambivalence and identifying ways to enhance readiness to change are critical steps in effective treatment (Cockell et al. 2003).
2. Knowing the patient's stage of change will better enable the clinician to recommend and implement appropriate treatment tailored to the patient and family's needs (Lask et al. 2007).
3. Treatment recidivism and dropout may be due to programmatic attempts to reduce symptoms in individuals who are not yet ready for change (Geller et al. 2001).
4. The level of readiness to recover may be a predictor of outcome (Rieger et al. 2000).

The focus of this paper is to review the available measurements for motivation to change in eating disorders, and to summarize their psychometric properties (for a definition of psychometric properties, see appendix).

Methods

References for literature search were provided by the supervisor, Bryan Lask, M.D., and by electronically searching in PubMed and PsychINFO for the terms

- (1) “motivation” or “readiness to recover”
- and
- (2) “eating disorders” or “anorexia nervosa”

The articles selected for the review included source articles which described the psychometric properties and development of the instruments.

Results

Our search yielded seven published instruments specifically designed to measure motivation in eating disorders, and these seven instruments are reviewed below. In addition, an eighth general measure of motivation was included in our review (URICA) due to its frequent use in motivation research within the field of eating disorders.

RMI

Description of Measure

The Readiness and Motivation Interview (RMI) (Geller & Drab, 1999) is an interview for establishing readiness and motivation in eating disorders (Geller et al. 2001). With basic clinical skills in eating disorders, the interviewer needs training for 25-30 hours. The semi-structured interview takes 30-50 minutes. The patient and therapist work together for mapping readiness and motivation for each symptom. The symptoms are based on the EDE diagnostic questions and grouped into (1) cognitive, (2) restriction, (3) bingeing, and (4) compensatory

strategies. Restraint over eating is added to the EDE diagnostic questions, since that is a central aspect in anorexia nervosa and a key marker of recovery (Geller et al. 2001). Each symptom is evaluated and categorized into one of the stages: precontemplation, contemplation or action/maintenance. The patient also receives a global stage-evaluation, and estimation whether the change is made for external or internal reasons.

Psychometric properties

Interrater reliability 0.96-0.97 for the different stages (Geller et al. 2001, n=99, mean age 25.7 years, obtained by listening to recordings of the original interview).

Internal consistency 0.73-0.86 in the different stages (Geller et al. 2001).

Convergent validity supported, correlation with two assessments that theoretically assess similar construct as the RMI (Geller et al. 2001).

Discriminant validity supported (Geller et al. 2001).

Concurrent and Predictive validity supported, predicting clinical outcome variables such as the decision to enroll in treatment, dropout, symptom change, and relapse (Geller et al. 2001).

Conclusions

Geller et al. (2001) found that readiness can differ across symptom domains, suggesting higher readiness to change the anxiety-inducing symptoms such as bingeing, and lower readiness to change the comforting symptoms such as exercising and calorie restriction. The RMI might be particularly useful for patients with chronic eating disorders, or for patients that have not engaged readily in prior treatment attempts. The RMI could be useful initially to focus treatment on better understanding the function served by symptoms not viewed by the individual as problematic, while actively working on changing symptoms that are experienced as problematic (Geller et al. 2001). Two published follow-up papers (Geller et al. 2004 & 2005) provide further support for the psychometric properties found by Geller et al. (2001).

P-CAN

Description of Measure

The Pros and Cons of Anorexia Nervosa Scale (P-CAN) (Serpell et al. 2004) is a quantitative measure of positive and negative aspects of anorexia nervosa. This self-report questionnaire has 50 items that are derived from a previous qualitative study by Serpell et al. (1999) where women wrote letters to their anorexia nervosa.

The questionnaire has 10 subscales. Six of the subscales are pro-anorexia (1) safe/structure, (2) appearance, (3) fertility/sexuality, (4) fitness, (5) communicate emotions/distress, and (6) special/skills. The remaining four are con-anorexia (1) trapped, (2) guilt, (3) hatred, and (4) stifles emotions. Each item has five possible answers (1) agree strongly, (2) agree moderately, (3) neither agree nor disagree, (4) disagree moderately, and (5) disagree strongly.

Psychometric properties

Internal consistency 0.79-0.97 on subscales (Serpell et al. 2003, n = 48, mean age 15.9 years) and 0.68-0.89 on subscales (Serpell et al. 2004, n = 233, mean age 27.9 years).

Test-retest reliability (mean time 8.6 days) 0.60-0.85 (Serpell et al. 2004).

Face validity acceptable (Serpell et al. 2004).

Content validity acceptable (Serpell et al. 2004).

Conclusions

The P-CAN has good reliability (Serpell et al. 2003 & 2004), although its validity is not fully established (Serpell et al. 2004). Serpell et al. (2004) suggest that the strength of pro subscales is related to the severity of anorexia nervosa. Serpell et al. (2003) found significant differences between the P-CAN scores of children/adolescents, and the scores by adults. The

younger patients seem to have a tendency to score lower on some subscales. The P-CAN is likely to be a useful clinical tool and also useful in research for quantifying aspects that previous were assessed qualitatively (Serpell et al. 2004).

DB

Description of Measure

The Decisional Balance Scale (DB) (Cockell et al. 2002) is a measurement to assess readiness for change in anorexia nervosa. It is developed by a number of specialists in the field of eating disorders. This self-report questionnaire has 30 items that can be rated on a 5-point Likert scale where 1 is 'not at all true', and 5 is 'completely true'. DB has three subscales: benefits, burdens, and functional avoidance. The benefits and burdens resemble of pros and cons. The benefits subscale has 8 items dealing with (1) self-control, (2) being very thin, and (3) striving for perfection, and the burden subscale has 15 items dealing with (1) social isolation, (2) negative affect, and (3) loss of energy. The functional avoidance with its 7 items reflects the way that anorexia nervosa provides a way to avoid dealing with aversive (1) emotions, (2) challenges, and (3) responsibilities. This subscale extends the understanding of motivation for change beyond traditional decisional balance models, and increased insight about functional avoidance may help patients shifting from precontemplation to contemplation (Cockell et al. 2003).

Psychometric properties

Internal consistency 0.88 for each of the three subscales (Cockell et al. 2002, n = 246, mean age 28.4 years).

Test-retest reliability over one week 0.64-0.71 on the subscales (Cockell et al. 2002).

Convergent validity supported (Cockell et al. 2003, n = 80, mean age 25.3 years).

Discriminant validity supported (Cockell et al. 2003).

Conclusions

The DB showed good internal consistency, acceptable test-retest reliability (Cockell et al. 2002), and good convergent and discriminant validity (Cockell et al. 2003). The new subscale, functional avoidance, increases the understanding of motivation, which is as important to address as the subscales benefits and burdens (Cockell et al. 2003). The authors argued that further research should consider other variables that can affect the shifts in stage of change (Cockell et al. 2003).

ANSOCQ

Description of Measure

The Anorexia Nervosa Stages of Change Questionnaire (ANSOCQ) (Rieger et al. 2000) is a 20-item, self-report questionnaire. It is based on the stages of change model developed by Prochaska and DiClemente, and designed to evaluate readiness to recover in anorexia nervosa.

The items were initially based on the Eating Disorder Inventory (EDI-2, Garner, 1991) and URICA (McConaughy et al. 1989). These items were reviewed by 10 clinicians in the area of eating disorders, 10 experts on the stages of change, and 10 inpatients treated for anorexia nervosa.

The items on the ANSOCQ measure aspects of (1) body shape and weight, (2) eating behaviours, (3) weight control strategies, (4) emotional difficulties, (5) problematic personality, and (6) interpersonal conflicts. Each item has five statements that represent the five stages of change: precontemplation, contemplation, preparation, action, and maintenance.

The patient selects the statement/statements that best describe her current attitude and behaviour. The scores on each item range from 1 for precontemplation to 5 for maintenance.

Psychometric properties

Internal consistency good, 0.90 (Rieger et al. 2000) and 0.94 (Serrano et al. 2004, study of the Spanish version of ANSOCQ).

Test-retest reliability over one week was 0.89 (Rieger et al. 2000), and 0.92 (Serrano et al. 2004).

Concurrent validity supported. The correlation between patient and therapist scores on the ANSOCQ was 0.54 (Rieger et al. 2000). Significant correlations were found with other scales measuring readiness to recover and other symptomatic scales for eating disorders (Rieger et al. 2000). Significant negative correlations were found between the ANSOCQ and measurements for eating attitudes and symptoms associated with eating disorders, and with a scale of depression (Serrano et al. 2004).

Predictive validity supported. Rieger et al. (2000, n = 71, mean age 19.0 years) chose weight gain as the measurement of outcome, and they found significant correlation with weight gain both 1 and 2 weeks after making the ANSOCQ-scoring. This study evaluated 71 inpatients, and the results might be a sign of “eating myself out of the hospital”. Ametller et al. (2005, n = 70, mean age 15.6 years) designed a study to determine if motivation to change in anorexia nervosa during treatment was a predictor of hospitalization, and found that patients with low ANSOCQ scores were more likely to need hospitalization during the following 6-9 months.

Construct validity supported. Significant correlations existed between ANSOCQ scores and other instruments assessing the construct of decisional balance and self efficacy (Rieger et al 2002).

Discriminant validity mixed results (Rieger et al. 2000).

Conclusions

The ANSOCQ is a psychometrically sound instrument that may be useful in investigating the role of readiness to recover in anorexia nervosa (Rieger et al 2000 & 2002). Serrano et al. (2004) concludes that the Spanish version of ANSOCQ seems to be a reliable instrument to evaluate readiness to recover in adolescents with anorexia nervosa. It might also be useful as a predictor of hospitalisation (Ametller et al. 2005).

BNSOCQ

Description of Measure

The Bulimia Nervosa Stages of Change Questionnaire (BNSOCQ) (Martínez et al. 2007) was modified based on the ANSOCQ (Rieger et al. 2000) as research suggests that anorexia nervosa and bulimia nervosa patients share similar body shape and weight concerns. It is designed to evaluate readiness to recover from bulimia nervosa for both clinical and research settings. In addition to the areas that ANSOCQ assesses, it has a separate section with items related to characteristic bulimic symptoms such as binge eating and compensatory behaviours.

This self-report questionnaire has 20 items. Like the ANSOCQ, each item has five statements that represent the five different stages of change (precontemplation, contemplation, preparation, action, and maintenance) and each item is rated from 1 (precontemplation) to 5 (maintenance).

Psychometric properties

Internal consistency 0.94 (Martinez et al. 2007).

Test-retest reliability over one week 0.93 (Martinez et al. 2007).

Validity initial support. Martinez et al. (2007, n=30, mean age 16.3 years) found negative and strong correlation between BNSOCQ and an instrument for evaluating attitudes and symptoms associated with eating disorders.

Conclusions

Martinez et al. (2007) found good reliability, similar to the data on ANSOCQ (Rieger et al. 2000 & Serrano et al. 2004). They also provide initial support for the validity of the measure. To confirm and extend these results, studies with larger samples, adult patients, and a design that measure predictive validity would be necessary (Martinez et al. 2007). In this study, the BNSOCQ score was related to the severity of the bulimic symptoms, such that the more intense and established the bulimic behaviours and impulse control problems, the lower the motivation to change. The BNSOCQ has a limitation regarding its power to assess different dimensions of motivation, such as willingness, readiness, and confidence (Martinez et al. 2007).

MSCARED

Description of Measure

The Motivational Stages of Change for Adolescents Recovering from an Eating Disorder (MSCARED) (Gusella et al. 2003) is a brief questionnaire designed for adolescents. It is based on Prochaska and DiClement's model of stages of change, and guided by motivational and narrative approaches to assessment and therapy (Gusella et al. 2003).

The questionnaire is a list with six statements consisting of the definitions of precontemplation, contemplation, preparation, action, maintenance and recovery. The patient reads these statements and then indicates in which stage she feels best represents her current state. Before the patient looks at the questionnaire, the interviewer and the patient discuss what is taking action against an eating disorder; (1) giving up dieting, (2) excessive

exercising, (3) binge eating, (4) vomiting or laxative use, and (5) starting to recognize, express and deal with emotions. If the patient indicates the stage of action or maintenance, the interviewer and the patient look through the list of actions to check whether she's currently making these actions. The questionnaire takes 10 minutes to complete.

Psychometric properties

Test-retest reliability over one week 0.92 (Gusella et al. 2003, n = 34, mean age 16.0 years, here n=16).

Concurrent validity supported. Gusella et al. (2003) found significant relationship between interviewer and respondents rating 0.79 (n=17), and mother and daughter rating 0.64 (n=12). The study also shows correlations between initial stage of change and other measures of eating disorder symptomatology (Gusella et al. 2003).

Predictive validity supported. In Gusella et al. (2003) the participants (n=34) filled out the MSCARED before and after a nine-week weekly treatment group for girls, and found that the patients moved up one stage from the beginning to the end of group treatment.

Conclusions

The MSCARED has good reliability and support is found for concurrent and predictive validity (Gusella et al. 2003). This study suggests that MSCARED can be administrated at different points in treatment of an eating disorder to identify movement through the stages of change, and to identify which areas the patient has targeted for change. This initial study had a small sample size and applies only to adolescent girls, so there is a need for a study with a larger sample, including adolescent boys and comparing with other methods of assessing readiness to change (Gusella et al. 2003). Gusella et al. (2003) indicates plans for future study about decisional balance questions, but this appears unpublished to date.

ACTA

Description of Measure

Attitudes Towards Change in Eating Disorders (ACTA) (Beato-Fernandez & Rodriguez-Cano, 2003) is a Spanish self-report questionnaire based on Prochaska and DiClemente's model of stages of change. It is based on the cognitive, affective, behavioural and relational characteristics of eating disorders. The questionnaire is easily administrated and has 59 items that are rated with a 0-4 Likert scale (from no/never to yes/always). It has five subscales precontemplation, contemplation, preparation, action, and maintenance. The patient receives separate scores for each subscale with a predominant stage of change based on the highest score. It has not been translated to English.

Psychometric properties

Internal consistency good. All subscales over 0.70 (Beato-Fernandez & Rodriguez-Cano, 2003).

Validity supported (details about what kind of validity not provided). The subscales of ACTA were logically correlated to each other and to questionnaires measuring eating psychopathology (Beato-Fernandez & Rodriguez-Cano, 2003).

Conclusions

ACTA is written in Spanish, with no English translation. Beato-Fernandez & Rodriguez-Cano (2003) suggest that the ACTA is an easily administrated, reliable and valid questionnaire to be used within the motivational approach. This study is only published in Spanish, so the information is taken from the article's abstract and Rodriguez-Cano & Beato-Fernandez (2005).

URICA

Description of Measure

The University of Rhode Island Change Assessment (URICA) (McConaughy et al. 1989) is a 32-item self-report questionnaire developed to assess readiness to change across a broad range of problems. Since it is written in a general way, it refers to “the problem” and not to the particular symptoms/problems appearing in eating disorders. It is based on four stages of change precontemplation, contemplation, action, and maintenance (McConaughy et al. 1989). Each stage is assessed by eight items that can be scored from 1 (strongly disagree) to 5 (strongly agree). It has been used in the field of eating disorders (e.g. Treasure et al. 1999, Rieger et al. 2000).

Psychometric properties

No study has been conducted concerning the psychometric properties of URICA when used in the field of eating disorders. The psychometric properties have been studied by Dozois et al. (2004) using URICA in anxiety disorders and Amodei & Lamb (2004) using URICA in smoking cessation.

Internal consistency 0.73-0.90 and 0.77-0.84 for the different stages (Dozois et al. 2004).

Convergent and divergent validity mixed findings in the literature based on a variety of substance use (Amodei & Lamb, 2004). Few data available (Dozois et al. 2004).

Concurrent and predictive validity mixed findings in general (Dozois et al. 2004 & Amodei & Lamb, 2004).

Conclusions

No study has been published on the psychometric properties of URICA when used specifically in the field of eating disorders. Dozois et al. (2004) suggest good reliability, moderate convergent, divergent, and predictive validity. Rieger et al. (2000) found that

URICA overestimated the patients' readiness to change in anorexia nervosa compared to scoring on ANSOCQ.

Discussion

In this paper, the psychometric properties of eight instruments for assessing motivation are reviewed. Seven are specifically developed for eating disorders, while one instrument, the URICA, is general in its form. See Table 1 for a summary of their psychometric properties.

Table 1. Summary of the psychometric properties of the assessment reviewed.

	Reliability	Validity
RMI	Good	Support for convergent, divergent, concurrent, and predictive validity.
ANSOCQ	Good	Support for concurrent, predictive, and construct validity.
BNSOCQ	Good	Initial support for unspecified validity.
P-CAN	Moderate to good	Support for face and content validity.
DB	Moderate to good	Support for convergent and discriminant validity.
MSCARED	Good	Support for concurrent and predictive validity.
ACTA	Good	Supported (no details provided).
URICA	Good	Mixed findings.

Two instruments, owing to issues of language and scope, are not considered further in our discussion. Specifically, the ACTA (Beato-Fernandez & Rodriguez-Cano, 2003) is written in Spanish, and no English translation seems to exist. Due to limited information and area of use, ACTA is not discussed further in our paper. The URICA (McConaughy et al. 1989) is a general measurement for stages of change. No data is available on the psychometric properties of URICA within a sample of eating disorder patients. Therefore, it is difficult to

compare the data on URICA with the data on the other measurements, since they are obtained within the field of eating disorders. Thus, the URICA is not discussed further in our paper.

Although each of these measures provide an assessment of motivation to change, a direct comparison of their psychometric properties is difficult due the large number of methodological differences among studies. Concerning reliability, an examination of internal consistency and test-retest reliability was implemented in almost all of the studies reviewed, therefore allowing for more direct comparison of reliability. However, good reliability does not guarantee good validity. A comparison of validity was more complex given the different approaches to establishing validity. The studies varied in the composition of the patient samples, both diagnostically and by treatment setting, as well as by age and intended purpose of the assessment (screening, treatment planning, etc.). Table 2 summarizes the mean age, sample size, type of setting, and patient groups used for the development of each measure.

The instruments reviewed tended to employ two different approaches toward the assessment of motivation and readiness for change. The DB (Cockell et al. 2002) and the P-CAN (Serpell et al. 2004) are based on analyzing pros and cons in anorexia nervosa. In contrast, the ANSOCQ (Rieger et al. 2000), BNSOCQ (Martinez et al. 2007), MSCARED (Gusella et al. 2003), and RMI (Geller & Drab, 1999) are based on the trans-theoretical model of change (Prochaska & DiClemente, 1992).

In general, most authors acknowledged the various methodological limitations and restrictions on generalizability, but also pointed to future directions of research and encouraged additional studies to help advance our understanding of patient motivation and stages of change. Martinez et al. (2007) and Gusella et al. (2003) commented upon their small sample sizes, and that studies with larger sample sizes are needed to confirm their results. Rieger et al. (2000 & 2002) do not discuss the limitations of their studies.

Table 2. Composition of patient samples, and target groups.

	Mean age (years)	Sample size	Type of setting	Target group
MSCARED				AN and BN
Gusella et al. 2003	16.0	34*	In- and outpatients	
ANSOCQ				AN
Rieger et al. 2000	19.0	71	Inpatients	
Rieger et al. 2002	19.5	44	Inpatients	
Serrano et al. 2004	15.6	70	In-, out- and day	
BNSOCQ				BN
Martinez et al. 2007	16.3	30	In-, out- and daypatients	
RMI				AN and BN
Geller et al. 2001	25.7	99	Inpatients	
DB				AN
Cockell et al. 2002	28.4	246	In- and outpatients	
Cockell et al. 2003	25.3	80	Outpatients	
P-CAN				AN
Serpell et al. 2003	15.9	48	Not specified	
Serpell et al. 2004	27.9	233	In- and outpatients	

Note: * (parts of the study made with n = 16)

Given the pros and cons for each instrument, it remains therefore difficult to make a global recommendation for the “best buy” and the decision requires consideration of the purpose of the assessment, time and cost considerations, the resources available, and the intended patient group and setting. The RMI (Geller & Drab, 1999), for example, provides the patient the opportunity to evaluate each symptom together with the therapist, mapping which areas to focus the beginning phases of treatment. The therapist needs training and the interview takes 30-50 minutes, which makes the RMI a more expensive assessment than the pencil-paper questionnaires. The MSCARED (Gusella et al. 2003) is a very brief questionnaire and consists of definitions of the stages of change, so the patient can rate in which stage she is at the present moment. The ANSOCQ (Rieger et al. 2000) and BNSOCQ (Martinez et al. 2007) are 20-item questionnaires concerning anorexia nervosa and bulimia

nervosa, where the patient scores each given symptom. The P-CAN (Serpell et al. 2004) is a questionnaire mapping the pros and cons in anorexia nervosa and bulimia nervosa, and the DB (Cockell et al. 2002) assesses readiness for change in anorexia nervosa. The ANSOCQ, BNSOCQ, and MSCARED could be used, for example, as screening-tools to identify stage of change, but also during treatment to identify if any change in motivation has occurred. These questionnaires could be more suited for repeating evenly then the RMI, since they are less expensive to administer and less time-consuming.

In summary, choice of specific assessment depends largely on the intended purpose of the measure and the clinical or research setting. It is also important to note that psychometric properties are not fixed, but rather depend on the sample and setting. Thus, any research study using these instruments would benefit from an assessment of the basic psychometric properties within the desired sample and setting to reduce bias and ensure reliable and valid results. Future research on motivation for change in eating disorders may benefit from a cross-instrument comparison of the reviewed instruments to compare performance within a defined sample and setting.

Appendix

Definitions of psychometric properties

All the following definitions are extracted from Walsh & Betz (2001).

Reliability is the extent to which the measuring of an attribute is systematic and therefore repeatable.

Internal consistency is the degree to which each item of a test is measuring the same thing as each other item.

Test-retest reliability is the degree to which test scores are similar or stable over time versus the degree which scores change or fluctuate upon repeated testing.

Validity is the extent to which the test actually measures the characteristic or dimension it is intended to measure.

Construct validity is data supporting a propositioned construct that is associated with the construct of the test (for example, by looking at a person, the intelligence cannot be seen, but an IQ-test is a proposed measurement for the construct intelligence).

Content validity refers to how well the particular sampling of behaviours used to measure a characteristic reflects performance in the entire domain of behaviours that constitutes that characteristic.

Convergent validity is the relationship between the test and an independent measures of the same trait.

Criterion-related validity is the extent to which a measure of an attribute demonstrates an association with some independent or external indicator (criterion) of the same

attribute. There are two kinds of criterion-related validity: *Predictive validity* is when the criterion is measured some time after scores are obtained on the test (the present status on the test predicts the future status on the criterion variable). *Concurrent validity* is when both the test and the criterion scores are obtained at the same time (there is a relationship between the present status on the test and the present status on the criterion).

Divergent validity is the absence of relation to variables that the test is not postulated to reflect.

Face validity is the extent the test appears to look like a test of the concept it is intended to measure.

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